




In re Application: BOERTJES, David, W.; HINDS, Mark, R.; PARSONS, Kieran, J.;
PARRY, Simon, Paul
Serial No.: 10/029,282
Filed: December 28, 2001
Title: PROGRAMMABLE OADM WITH CHROMATIC DISPERSION,
DISPERSION SLOPE AND AMPLITUDE RIPPLE
COMPENSATION, AND METHOD
Group: 2613
Examiner: LEUNG, Christina Y
Attorney Ref.: PAT 2682-2 US

Declaration under 37 CFR 1.131

The undersigned, David Boertjes, hereby declares on information and belief:

- 1) I am the first named inventor of the present patent application.
- 2) Further to my previous Declarations of August 30, 2005, and February 15, 2006, I have reviewed my files pertaining to the present invention.
- 3) A powerpoint presentation that demonstrates conception of the present invention was prepared by my co-inventor on April 13, 2000 and sent to me via email on April 14, 2000. The presentation is attached as Exhibit "A".
- 4) We had to co-ordinate with co-inventors spread across two continents and then spent the following months further making further refinements and seeking and obtaining management approval to proceed with implementing the invention. We each had many other responsibilities during the same timeframe which forced us to divide our time among several projects, hence limiting the amount of time we could spend pursuing this invention. However we continued to pursue it, and never ceased doing so.
- 5) As set out in my prior declaration, an invention disclosure was submitted to the Nortel Networks patent department no later than 10 October 2000. A review process and subsequent patent application preparation occurred between at least 10 October 2000 and the time the instant patent application was filed on 28 December 2001.

6) I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 USC 1001 and that such willful false statements may jeopardize the validity of the instant application or any patent issued thereon.


David Boertjes

Date 11 August 2006.

Sworn before me on the 11th day of August, 2006, at Ottawa, Ontario, Canada.

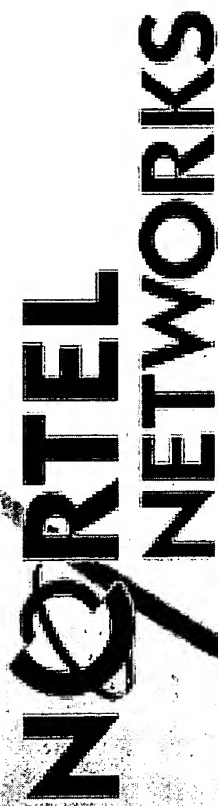

JEFFREY M. MEASURES
BARRISTER & SOLICITOR

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Group: 1773
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EXHIBIT A



Jeffrey M. Measures



Equinox Amplifier Optics OADM Proposal Version 1.0

David Boertjes, Kieran Parsons,

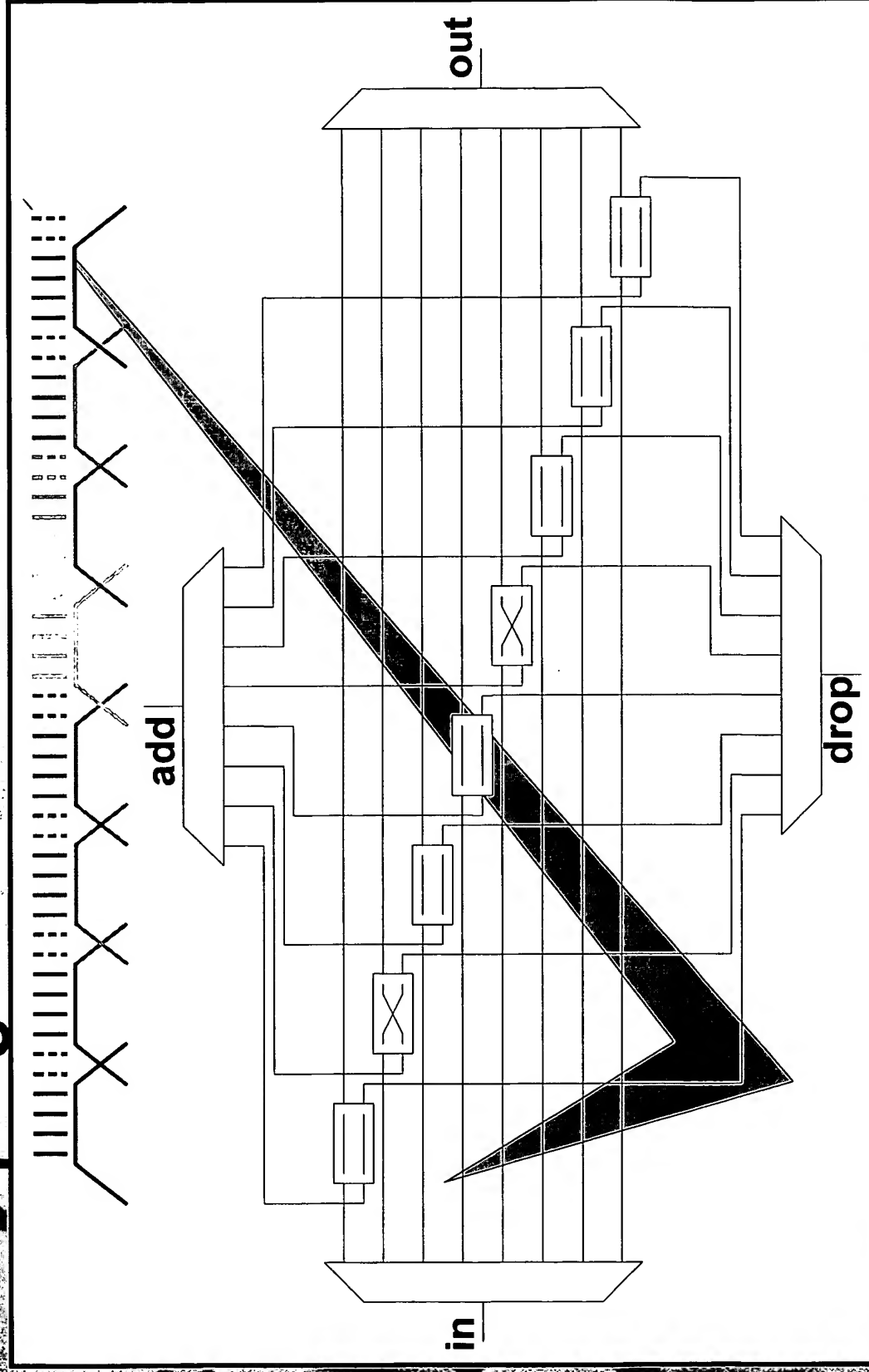
Mark Hinds

April 13, 2000

NORTEL NETWORKS CONFIDENTIAL



OADM – option 1 - traditional filter approach C-Band programmable OADM scheme



©ADM – option 1 - traditional filter approach specifications

• Preliminary (Target) Specifications

- pass BW: $F_o \pm <200\text{GHz}$
- ripple $< 0.15\text{dB}$
- ripple slope $< 2.5\text{dB/THz}$
- CD $< \pm 5\text{ps/nm}$
- IL $< 8\text{dB}$ (paired MUX/DEMUX with 1 BS + 0.5dB for switch)
- may need to skip 4 in the middle of band to ease specs on BS
- stop band: $F_o \pm >400\text{GHz}$
- isolation in stop band $> 30\text{dB}$ (per filter giving $>60\text{dB}$ for pair)

• Candidate Technologies

- dielectric filters
- mechanical 2x2 latching switches

• Potential Suppliers

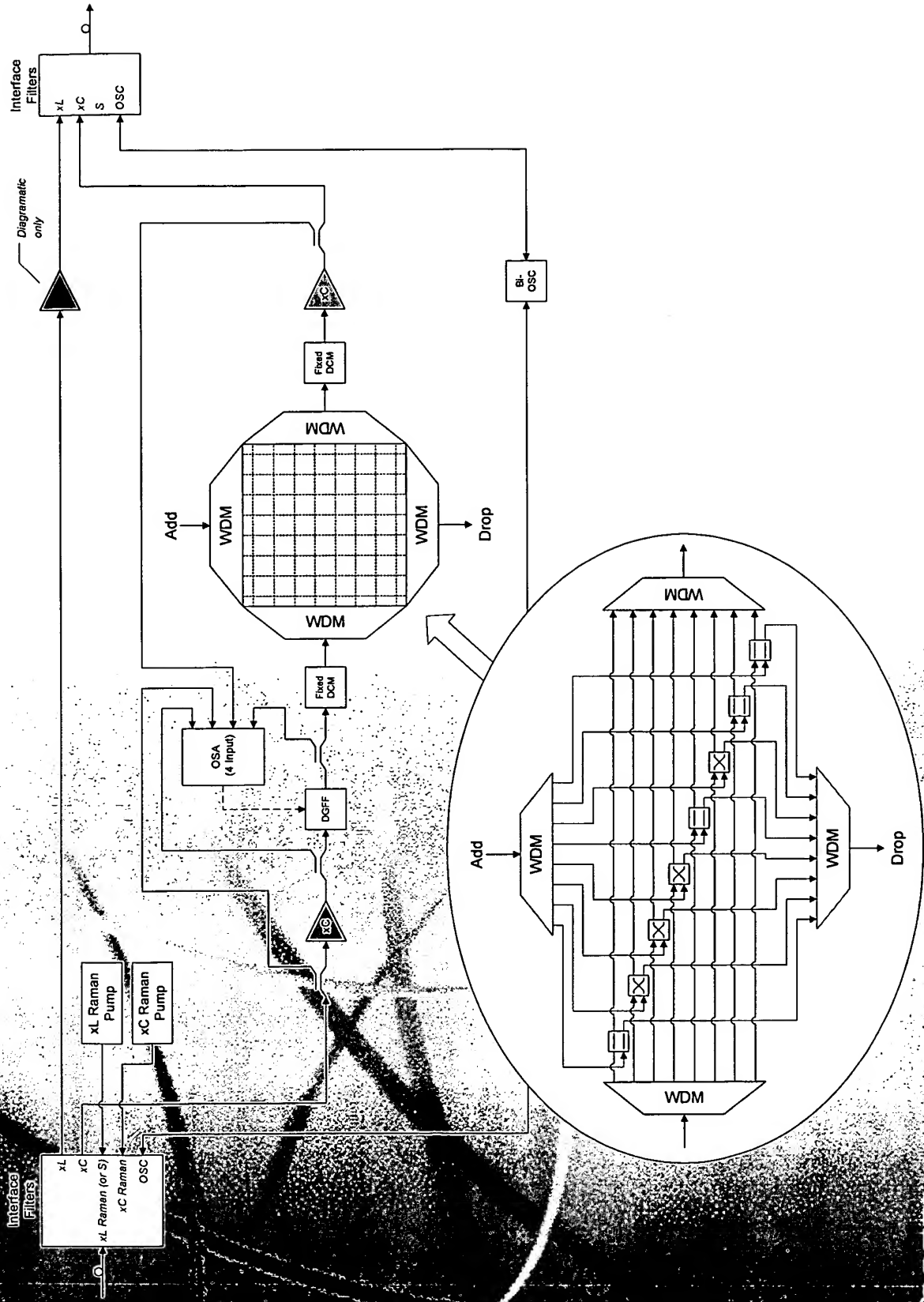
- Corning, JDSU, ETEK, Oplink etc.

OADM -- option 1.2 - OADM wavelength plan

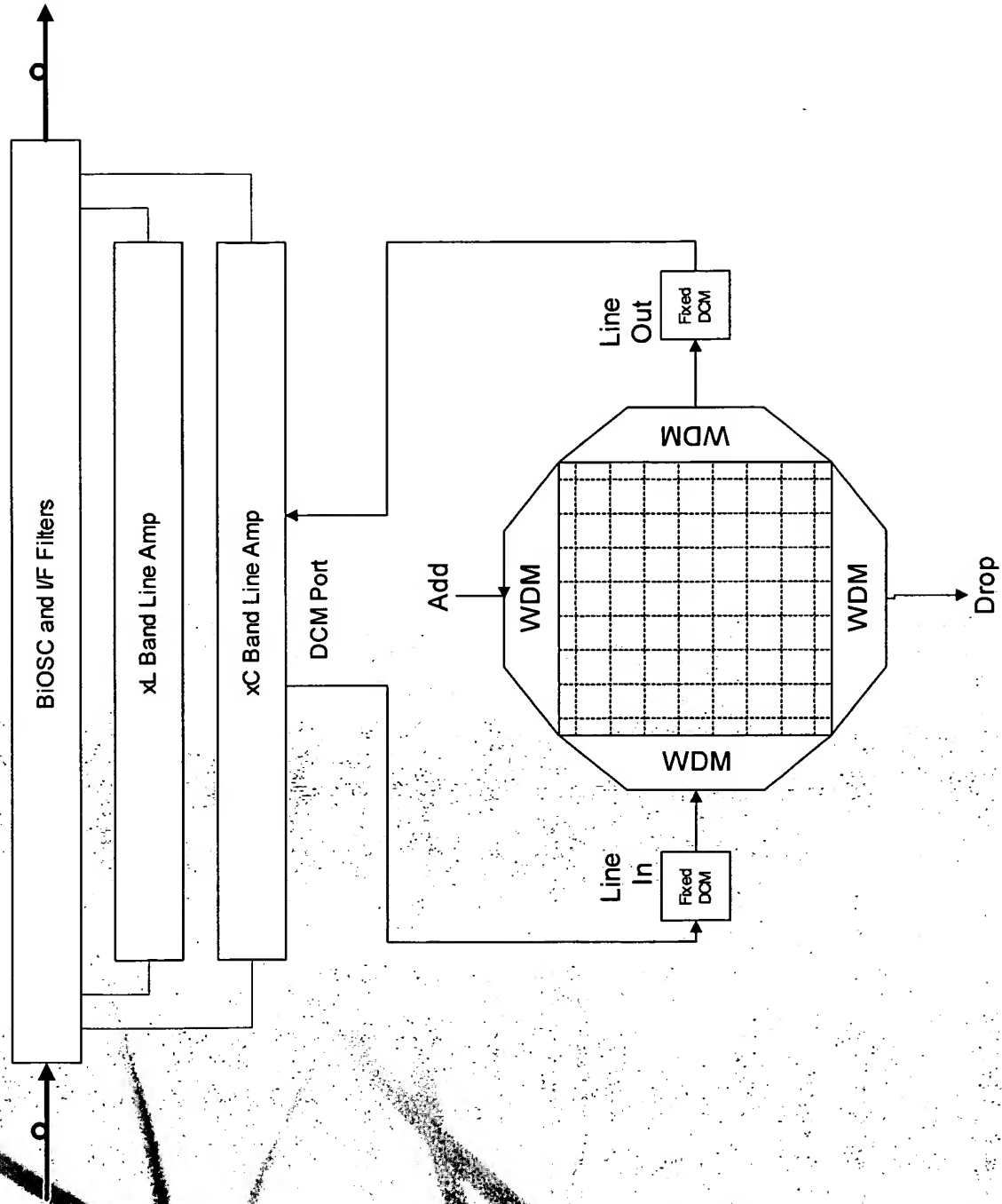
OADM option 1.2			
Group Number	Channel Number	F (THz)	λ (nm)
1	1	196.300	1527.216
	2	196.200	1527.994
	3	196.100	1528.773
	4	196.000	1529.553
	5	195.900	1530.334
2	6	195.800	1531.116
	7	195.700	1531.898
	8	195.600	1532.681
	9	195.500	1533.465
	10	195.400	1534.250
3	11	195.300	1535.036
	12	195.200	1535.822
	13	195.100	1536.609
	14	195.000	1537.397
	15	194.900	1538.186
4	16	194.800	1538.976
	17	194.700	1539.766
	18	194.600	1540.557
	19	194.500	1541.349
	20	194.400	1542.142
4.5	21	194.300	1542.936
	22	194.200	1543.730
	23	194.100	1544.526
	24	194.000	1545.322
	25	193.900	1546.119
5	26	193.800	1546.917
	27	193.700	1547.715
	28	193.600	1548.515
	29	193.500	1549.315
	30	193.400	1550.116
6	31	193.300	1550.918
	32	193.200	1551.724
	33	193.100	1552.524
	34	193.000	1553.329
	35	192.900	1554.134
7	36	192.800	1554.940
	37	192.700	1555.747
	38	192.600	1556.555
	39	192.500	1557.363
	40	192.400	1558.173
8	41	192.300	1558.983
	42	192.200	1559.794
	43	192.100	1560.606
	44	192.000	1561.419
	45	191.900	1562.233
	46	191.800	1563.047
	47	191.700	1563.863
	48	191.600	1564.679

- larger dead-band makes band-split filters easier to make and easier to get
- same number of channels as option 1.1
- may be possible to optimize middle of band for express (groups 4, 4.5, and 5) which increases band utilization
- ACCEPTED 05/04/00: de-risks OADM implementation

Line Amp (OADM/Express)



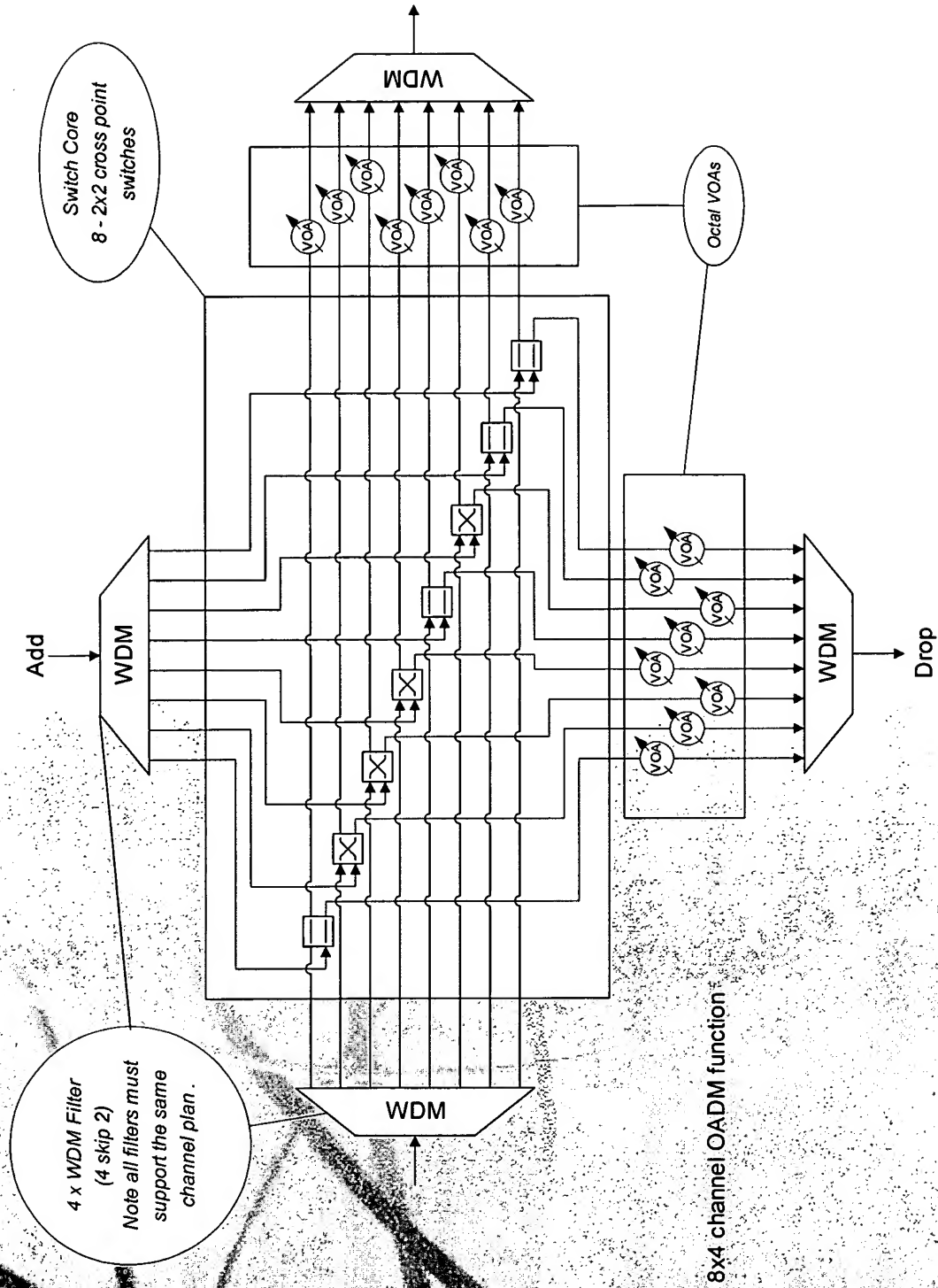
xl Express with xc OADM



OADM Design Issues

- **Connection association between**
 - preamp - DCM - OADM & OADM - DCM - Postamp
 - add port back to post amp & drop port to pre amp
 - each 4 channel add port and each 4 channel mux
 - each 4 channel drop port and each 4 channel demux
- **Different dispersion compensation strategies**
 - DCM - OADM - DCM or per band DCMs or....
- **Physical partitioning for each type of OADM block**
- **different flavors of OADM blocks**
 - all optical T or Y (different filter plans ==> different flavor)
 - O-E with multiple 4channel mux and demux (different filter plans)
- **mechanical concept for all types of OADM blocks**

OADM T&Y Junction Partitioning



OADM with 4 channel Mux and Demux

